

REMARKS

Claims 69 to 110 are added, claims 55 to 68 are canceled without prejudice (since their features have been included in their respective base claims), and therefore claims 1 to 4, 6 to 10, 12 to 22, 24 to 26, 28, 29, 31 to 38, 40 to 54, and 69 to 110 are now pending.

It is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is therefore respectfully requested.

With respect to paragraph three (3) of the Final Office Action, Applicants thank the Examiner for allowing claims 3 and 33.

With respect to paragraph six (6), claims 1, 24, 31, 55, 60 and 65 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Liu et al., U.S. Pat. No. 6,023,635.

To reject a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings -- which is not present here. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure -- as here. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features -- which is absent here. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

While the rejections are not agreed with, to facilitate matters and to better clarify claims 1, 24 and 31, each of these claims now includes the features of their respective base claims 55, 60 and 65. These amendments do not raise any new issues since claims 55, 60 and 65 (which have been canceled since their features have been included in their corresponding base claims) have already been considered.

Thus, each of these claims also now provides that *the first projection image and the second projection image are used to find a comparison image whose slice position corresponds to a slice position of a diagnostic image*, and further provides that the *corrected*

slice position is used to find a corresponding slice position.

The Final Office Action essentially admits that the projection image of the claimed subject matter is not disclosed by the Xu reference, but asserts that the secondary Liu reference suggests the projection image of the claimed subject matter.

In this regard, the secondary Liu reference refers to a method of MIP (Maximum Intensity Processing), as referred to at column 3, lines 49-64, for example. An MIP image is a projection of a three-dimensional volume. As asserted in the Final Office Action, the secondary Liu reference indicates that radiologists prefer viewing projection images rather than slice images in analyzing medical images. The Liu reference, however, only indicates that projection images may be used in analyzing medical images, but it does not in any way disclose or suggest that the projection image can be used to correct a slice position, as recited in the context of the claimed subject matter.

The benefit provided is that the corrected slice position may be used to find corresponding slice images, as explicitly provided for by each of claims 1, 24 and 31 as presented. This is so since each of these claims provides that *the first projection image and the second projection image are used to find a comparison image whose slice position corresponds to a slice position of a diagnostic image*, and further provides that the ***corrected slice position is used to find a corresponding slice position.***

It is respectfully submitted that it is simply not understood how any of the cited sections of the references would make obvious the subject matter of claims 1, 24 and 31 as presented.

In particular, the assertions presented in paragraph six (6) of the Final Office Action essentially ignore the differences between the primary and secondary references. This is because nothing in the Final Office Action or the Advisory Action, except hindsight reasoning, properly explains why it would be obvious to combine the Liu reference, which the Final Office Action concedes provides that radiologists prefer viewing projection images, with the primary Xu reference which only refers to a method to compare slice sections one-by-one only for the reason of finding a pair of the best-matched section images.

Accordingly, there is no motivation to combine the references so as to provide the features of “measuring shift amount” and “correcting the slice position”, and *in which the*

first projection image and the second projection image are used to find a comparison image whose slice position corresponds to a slice position of a diagnostic image, so that the corrected slice position is used to find a corresponding slice position, as provided for in the context of the claimed subject matter as presented, so that these features are not disclosed or suggested by the references relied upon, whether taken alone or combined. Even if there were such motivation, the combination would still lack these features as previously explained.

It is therefore respectfully submitted that claims 1, 24 and 31 as presented are allowable (as are each of their respective dependent claims).

With respect to paragraph seven (7), claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47, 50 to 54, 56 to 59, 61 to 64 and 66 to 68 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of the Liu reference, and in further view of Some et al., U.S. Patent No. 5,841,148.

While the rejections are not agreed with, to facilitate matters and to better clarify claims 2, 4, 6, 10, 25, 26, 28, 29, 32, 34 and 38, each of these claims now includes the features of their respective base claims 56, 57, 58, 59, 61, 62, 63, 64, 66, 67 and 68. In particular, these claims now include features like that of claims 1, 24 and 31 as presented so that they are allowable for essentially the same reasons. These amendments do not raise any new issues since claims 56, 57, 58, 59, 61, 62, 63, 64, 66, 67 and 68 (which have been canceled since their features have been included in their corresponding base claims) have already been considered.

It is respectfully submitted that each of the independent claims as presented are not obvious in view of the Xu and the Liu references for essentially the same reasons that claims 1, 24 and 31 as presented are not disclosed or suggested, as explained above, since the third-level Some reference does not cure the critical deficiencies of the primary Xu reference and the secondary Liu reference, as explained above. It is therefore respectfully submitted that all of the independent claims (and their respective dependent claims 16 to 19 and 50 to 54) are allowable for essentially the same reasons as claims 1, 24 and 31.

With respect to paragraph eight (8), claims 7, 8, 12, 35, 36 and 40 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Liu,

and in further view of Some et al., U.S. Patent No. 5,841,148, as applied to claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54, and in further view of Moshfeghi, U.S. Patent No. 5,368,033.

It is respectfully submitted that each of the independent claims are not obvious in view of the Xu and Liu references for essentially the same reasons that claims 1, 24 and 31 as presented are not suggested, as referred to above, since the Some reference and the third-level Moshfeghi reference do not cure the critical deficiencies of the primary Xu reference. In this regard, the Office Action only relies on Some and Moshfeghi for other features and not for the features discussed above that plainly distinguish the Xu reference. It is therefore respectfully submitted that all of the independent claims (and their respective dependent claims) are allowable for essentially the same reasons as claims 1, 24 and 31 as presented.

With respect to paragraph nine (9), claims 9, 22 and 37 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Liu and Some et al., U.S. Patent No. 5,841,148, as applied to claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54, and in further view of Jang et al., U.S. Patent No. 5,862,249.

Claims 9, 22, and 37 respectively depend from claims 6, 10, and 34 which are not described or suggested by the primary, secondary or third-level references, as explained above, and are therefore allowable for the same reasons as their respective base claims, since the fourth level “Jang” reference does not cure the critical deficiencies of the primary, secondary or third-level references. Accordingly, it is respectfully requested that the obviousness rejections be withdrawn.

With respect to paragraph ten (10), claims 13 to 15, 20, 21, 41 to 43, 48 and 49 were rejected under 35 U.S.C. § 103(a) as unpatentable over Xu et al., U.S. Patent No. 6,363,163, in view of Liu and Some et al., U.S. Patent No. 5,841,148, as applied to claims 2, 4, 6, 10, 16 to 19, 25, 26, 28, 29, 32, 34, 38, 44 to 47 and 50 to 54, and in further view of Kano et al., U.S. Patent No. 5,359,513.

Claims 13, 14, 15, 20, 21, 41, 42, 43, 48 and 49 respectively depend from claims 10, 10, 10, 6, 10, 38, 38, 38, 34 and 38 which are not disclosed or suggested by the primary, secondary or third-level references, and are therefore allowable for the same reasons as their respective base claims, since the fourth level “Kano” reference does not cure the critical

deficiencies of the primary, secondary or third-level references.

As further regards the obviousness rejections, the Office Action stated that the “multiple slice images of [Xu], which are perpendicular to the z-axis as illustrated in figures 2A and 2B, can be replaced by a projection image as suggested by [Liu]” (pages 4-5 in the Office Action).

However, if the slice images of figures 2A and 2B are changed to projection images, the projection images are line segments which are not used for correcting the slice position, *since even the combination of the applied references does not provide for the use of projection images, as is provided for by the presently claimed subject matter and the present application.*

Also, the Final Office Action stated that “by using projection images, the system of [Xu] would be robust to local shifts occurring only in a slice image, thereby increasing the accuracy of the correction of slice images.” However, “increasing the accuracy of the correction of slice images” does not cause motivation to modify the “Xu” reference to use projection images since projection images are used for increasing speed for detecting and correcting the slice position shift with the presently claimed subject matter. *The Advisory Action did not even address this issue.*

Accordingly, it is respectfully requested that the obviousness rejections be withdrawn.

As further regards all of the above obviousness rejections, to reject a claim as obvious under 35 U.S.C. § 103, the prior art must describe or suggest each claim element and it must also provide a motivation or suggestion for combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990)). Thus, the “problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem”, Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998). The references relied upon simply do not address the problems (referred to in the present application) that are met by the subject matter of any of the rejected claims, or provide the benefit that the corrected slice position may be used to find corresponding slice images, as explained above.

Moreover, it is respectfully submitted that the cases of In re Fine, *supra*, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Final Office Action's generalized assertions that it would have been obvious to modify the reference do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .

Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .

Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the present Final Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify the reference to provide the claimed subject matter to address the problems met thereby. Accordingly, the

Office must provide proper evidence of a motivation for modifying the reference to provide the claimed subject matter.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a “technologically simple concept” -- which is not the case here -- there still must be some finding as to the “specific understanding or principle within the knowledge of a skilled artisan” that would motivate a person having no knowledge of the claimed subject matter to “make the combination in the manner claimed,” stating that:

In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab’s invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings.

More recent still, in the case of In re Lee, 61 U.S.P.Q.2d 1430, 1433-35 (Fed. Cir. 2002), the Court reversed the Board of Appeals for relying on conclusory statements, stating the following:

*With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that “the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software” and that “another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial” do not adequately address the issue of motivation to combine. **This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority.** It is improper, in determining whether a person of ordinary skill*

would have been led to this combination of references, simply to “[use] that which the inventor taught against its teacher.” Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

....

In its decision on Lee's patent application, the Board rejected the need for “any specific hint or suggestion in a particular reference” to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal error and arbitrary agency action.

[The] “common knowledge and common sense” on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation.

[The] Board's findings must extend to all material facts and must be documented on the record, lest the “haze of so-called expertise” acquire insulation from accountability. “Common knowledge and common sense,” even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority.

It is respectfully submitted that this is applicable to what the Office has done here.

Still further, it is respectfully submitted that not even a *prima facie* case has been made in the present case for the obviousness rejections, since the Final Office Action never made any findings, such as, for example, regarding in any way what a person having ordinary skill in the art would have been at the time the claimed subject matter of the present application was made. (See *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998) (the “factual predicates underlying” a *prima facie* “obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art”)). It is respectfully submitted that the proper test for showing obviousness is what the “combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art”, and that the Patent Office must provide particular findings in this

regard -- the evidence for which does not include “broad conclusory statements standing alone”. (See *In re Kotzab*, 55 U.S.P.Q. 2d 1313, 1317 (Fed. Cir. 2000) (citing *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999) (obviousness rejections reversed where no findings were made “concerning the identification of the relevant art”, the “level of ordinary skill in the art” or “the nature of the problem to be solved”))). It is respectfully submitted that there has been no such showings by the Final Office Action.

In fact, it is respectfully submitted that the present lack of any of the required factual findings forces both Applicants and any Appeals Board to resort to unwarranted speculation to ascertain exactly what facts support the present rejections. The law mandates that the allocation of the proof burdens requires that the Patent Office provide a proper factual basis for rejecting a patent application under 35 U.S.C. § 103. (See *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984) (citing *In re Warner*, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967))). In short, the Office bears the initial burden of presenting a proper prima facie unpatentability case. (See *In re Oetiker*, 977 F.2d 1443, 1445, 24, U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)).

New claims 69 to 110 include claims 69-71, 72-74, 75-77, 78-80, 81-83, 84-86, 87-89, 90-92, 93-95, 96-98, 99-101, 102-104, 105-107, and 108-110, which respectively depend from claims 1, 2, 4, 6, 10, 24, 25, 26, 28, 29, 31, 32, 34, 38, and are therefore allowable for the same reasons as their respective base claims.

Still further, each of claims 69, 72, 75, 78, 81, 84, 87, 90, 93, 96, 99, 102, 105 and 108 provide the further feature of “adjusting positions of said diagnostic image and said comparison image” by “providing a MIDI signal” -- as is essentially provided for in allowed claims 3 and 33. These claims are therefore allowable for the further reason that any review of the applied references makes plain that this feature is in now way disclosed or suggested by the references relied upon.

Still further, each of claims 70, 73, 76, 79, 82, 85, 88, 91, 94, 97, 100, 103, 106 and 109 provide the further feature of “adjusting positions of said diagnostic image and said comparison image” by “providing a MIDI signal”, in which the adjusting includes constructing a MIDI signal by: providing different MIDI channels or control numbers or combinations of them for a signal; dividing said signal into a number of parts and assigning a

number to said signal; and constructing a MIDI control change message by using a MIDI channel or a control number -- as is essentially provided for in allowed claims 3 and 33. These claims are therefore allowable for the further reason that any review of the applied references makes plain that this feature is in now way disclosed or suggested by the references relied upon.

Still further, each of claims 71, 74, 77, 80, 83, 86, 89, 92, 95, 98, 101, 104, 107 and 110 provide the further feature of "adjusting positions of said diagnostic image and said comparison image" by "providing a MIDI signal", in which the adjusting includes constructing a MIDI signal by: providing n different MIDI channels or control numbers or combinations of them for a signal x; assuming said MIDI channels or said control numbers or said combinations as $p=1, 2, \dots n$; dividing said signal x into a number of parts and assigning p to said signal x; and constructing a MIDI control change message by using a MIDI channel or a control number corresponding to p -- as is essentially provided for in allowed claims 3 and 33. These claims are therefore allowable for the further reason that any review of the applied references makes plain that this feature is in now way disclosed or suggested by the references relied upon.

Finally, as to the assertions of the Advisory Action, with the presently claimed subject matter, the projection images are created from tomographic images, which corresponds to a three-dimensional image (slice image sequence) of a human body. If the tomographic images that form a human shape are projected to a plane, a set of line segments that forms a human shape like a shadow of a human body may be obtained. In contrast, since slice images are compared with each other in the "Xu" reference, slice images in Figures 2A and 2B are obtained first from tomographic images in the "Xu" reference. Then, if each of the slice images shown in Figures 2A and 2B is projected on a plane, only useless line segments are obtained.

In summary, it is respectfully submitted that claims 1, 2, 4, 6 to 10, 12 to 22, 24 to 26, 28, 29, 31, 32, 34 to 38, and 40 to 54, as presented, and claims 69 to 110 are allowable at least for the foregoing reasons -- like allowed claims 3 and 33.

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Reply to Final Office Action of May 3, 2004

CONCLUSION

In view of all of the above, it is believed that the rejections have been obviated, and that claims 1, 2, 4, 6 to 10, 12 to 22, 24 to 26, 28, 29, 31, 32, 34 to 38, and 40 to 54, as presented, and claims 69 to 110 are allowable -- like allowed claims 3 and 33. It is therefore respectfully requested that the rejections be reconsidered and withdrawn, and that the present application issue as early as possible.

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